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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,549	01/09/2002	Christopher A. Michaluk	00029CIP	5470
7590 Martha Ann Finnegan, Esq. Cabot Corporation 157 Concord Road Billerica, MA 01821				
02/21/2008				
EXAMINER				
ZHENG, LOIS L				
ART UNIT		PAPER NUMBER		
1793				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary****Application No.**

10/042,549

**Applicant(s)**

MICHALUK, CHRISTOPHER A.

**Examiner**

LOIS ZHENG

**Art Unit**

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2, 4-8, 12, 13, 18-35, 37, 39-43, 47, 48, 53-95 and 98-101 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2, 4-8, 12, 13, 18-35, 37, 39-43, 47, 48, 53-95 and 98-101 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Status of Claims***

1. Claims 2, 18, 23, 28, 37, 53, 58, 63 and 89-94 are amended in view of applicant's claim amendments filed 5 November 2007. Claims 1, 3, 9-11, 14-17, 36, 38, 44-46, 49-52 and 96-97 are canceled in view of applicant's amendments. Therefore, claims 2, 4-8, 12-13, 18-35, 37, 39-43, 47-48, 53-95 and 98-101 are currently under examination.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 2, 4-8, 12, 18-21, 23-26, 71-79, 89-91, 95 and 98-99 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clark et al. "Influence of Transverse Rolling on the Microstructural and Textural Development of Pure Tantalum", Metallurgical Transactions A, Volume 23A, August 1992, pages 2183-2191(Clark) in view of International Application Publication WO 87/07650(WO '650), and further in view of Friedman et al. US 5,482,672(Friedman).

The teachings of Clark in view of WO'650 and Friedman are discussed in paragraph 5 of the previous Non-Final Office Action mailed 3 May 2007. The rejection ground established in the previous office action still applies to instant claims 2, 4-8, 12, 18-21, 23-26, 71-79, 89-91, 95 and 98-99 with the current claim amendments for the same reasons as stated in paragraph 5 of the previous Non-Final Office Action.

4. Claims 22 and 27-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clark in view of WO '650 and Friedman, and further in view of Wittenauer et al. US 5,121,535(Wittenauer).

The teachings of Clark in view of WO'650, Friedman and Wittenauer are discussed in paragraph 6 of the previous Non-Final Office Action mailed 3 May 2007. The rejection ground established in the previous office action stilled applies to instant claims 22 and 27-35 with the current claim amendments for the same reasons as stated in paragraph 6 of the previous Non-Final Office Action.

5. Claims 37-43, 47-48, 53-56, 58-61, 80-88, 92-94 and 100-101 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clark in view of Friedman, further in view of Japanese Patent 362104180A(JP'180).

The teachings of Clark in view of WO'650, Friedman and JP'180 are discussed in paragraph 7 of the previous Non-Final Office Action mailed 3 May 2007. The rejection ground established in the previous office action stilled applies to instant claims 37-43, 47-48, 53-56, 58-61, 80-88, 92-94 and 100-101 with the current claim amendments for the same reasons as stated in paragraph 7 of the previous Non-Final Office Action.

6. Claims 57 and 62-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clark in view of Friedman and JP '180, and further in view of Wittenauer.

The teachings of Clark in view of Friedman and JP'180 are discussed in paragraph 8 of the previous Non-Final Office Action mailed 3 May 2007. The rejection ground established in the previous office action stilled applies to instant claims 57 and

62-70 with the current claim amendments for the same reasons as stated in paragraph 8 of the previous Non-Final Office Action.

7. Claims 2, 4-8, 12, 18-21, 23-26, 71-79, 89-91, 95 and 98-99 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turner US 6,331,233 B1(Turner), and further in view of Friedman et al. US 5,482,672(Friedman).

The teachings of Turner and Friedman are discussed in paragraph 9 of the previous Non-Final Office Action mailed 3 May 2007. The rejection ground established in the previous office action still applies to instant claims 2, 4-8, 12, 18-21, 23-26, 71-79, 89-91, 95 and 98-99 with the current claim amendments for the same reasons as stated in paragraph 9 of the previous Non-Final Office Action.

8. Claims 22, 27-35, 57 and 62-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turner in view of Friedman, and further in view of Wittenauer.

The teachings of Turner and Friedman are discussed in paragraph 10 of the previous Non-Final Office Action mailed 3 May 2007. The rejection ground established in the previous office action still applies to instant claims 22, 27-35, 57 and 62-70 with the current claim amendments for the same reasons as stated in paragraph 10 of the previous Non-Final Office Action.

### ***Response to Arguments***

9. Applicant's arguments filed 5 November 2007 have been fully considered but they are not persuasive.

In the remarks, applicant argues that Clark teaches a final tantalum rolling bar product that is rectangular in shape. One of ordinary skill in the art would not find it obvious to incorporate Friedman's extrusion to make a cylindrical product in Clark.

Clark teaches extrusion to form a rectangular sheet shaped tantalum product. Friedman teaches extrusion to form cylindrical bar shaped product. It is widely known in the art of metal working that the product shape depends upon the shape of the die in the extruder. Clark's teaching of extrusion to produce a rectangular sheet shape product does not necessarily prevent one of ordinary skill in the art to use extrusion to produce a cylindrical bar shaped product. In fact, Friedman's teaching proves that extrusion can also be used to form cylindrical bars. Therefore, one of ordinary skill in the art would have found it obvious to have used the process of Clark to form cylindrical bar shaped tantalum product with expected success in view of the teachings of Friedman and general knowledge of the art.

Applicant further argues that the claimed starting size of ingot and the claimed final extruded billet aspect ratio and diameter is not obvious over Clark, Friedman and WO'650 since none of the references teaches or suggests achieving an extruded billet with the claimed dimensions.

The examiner does not find applicant's argument persuasive because the dimensions of the extruded billet is determined by the size and shape of the product that one of ordinary skill in the art desires, which changes depending upon the application of the final metal product. Therefore, one of ordinary skill in the art would have found it obvious to have varied the diameter of the die in the extruder used in the process of

Clark in view of WO'650 and Friedman via routine optimization in order to achieve the desired shape and dimension in the tantalum product, including the product with claimed dimensions, depending on the desired application and specification for the product. In addition, one of ordinary skill in the art would have found it obvious to use starting billet with reasonable diameter size, including the claimed starting billet diameter, in the extrusion process of Clark in view of WO'650 and Friedman in order to produce to form final tantalum produce of desired dimension and quality absence persuasive evidence demonstrating the significance of diameter of the starting billet on the final product side and quality.

Applicant further argues that instant specification shows that commercially-made billets did not have the same properties as the extruded billets of the instant invention.

The examiner does not find applicant's argument persuasive. The teachings of the specification (i.e. pages 16-18) and figures of the instant invention are not commensurate with the scope of applicant's claims and are not sufficient to support applicant's allegation. According to Fig. 2(B), the commercial process produces a product with average grain size of 60 microns and 100% recrystallization. The initial ingot diameter used in the commercial process was 12" and the final rod diameter is 3.75" (page 17 lines 1-3). Process B according to applicant's invention produces a product with average grains sizes of 65 and 63 microns and 100% recrystallization (Fig. 2B). The initial ingot diameter used in Process B according to applicant's invention was 10" and the diameter of the die used in extrusion was 4" (page 17 lines 11-20). Since, the comparisons are not done with the same starting material and the final diameter of

the rod produced by Process B is also not shown, and the resulting product from the commercial process also shows grain size and % recrystallization that satisfy the instant claims, the examiner concludes that the data provided in the instant specification is not sufficient.

Applicant further argues that the cited art would not achieve the claimed billet structure and properties.

The examiner does not find applicant's argument persuasive since the cited art, in combination, teaches a tantalum billet product that is substantially the same as the claimed tantalum billet product and produced by a substantially the same extrusion process as claimed. Therefore, one of ordinary skill in the art would have found it obvious that the product produced by the process of Clark, WO'650 and Friedman would have substantially the same structure and properties as claimed.

Applicant further argues that the one would not incorporate Wittenauer into the teachings of Clark because Wittenauer relates to forming thin metal sections of reactive metals.

The examiner does not find applicant's argument persuasive since Wittenauer teaches application of a protective coating to metal workpiece prior to hot working such as extrusion in order to prevent oxidation during process and the protective layer can be removed by machine cleaning after hot working(see paragraph 6 of the previous Non-Final Office Action). Oxidation prevention during hot working is a general concern in the metal working art, including hot working of tantalum material, regardless of the shape of the final metal product. One of ordinary skill in the art would have found it obvious to



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incorporated the application of protective coating prior to extrusion and removal of protective coating after extrusion as taught by Wittenauer into the process of Clark in view of WO'650 and Friedman in order to prevent oxidation during hot working.

Applicant further argues that Clark's teaching regarding tantalum is not relevant to niobium.

The examiner does not find applicant's argument persuasive since niobium and tantalum belongs to the same metal group on the periodic table and exhibit very similar properties. One of ordinary skill in the art would have found it obvious to substitute one for the other with expected success.

Applicant further argues that Turner teaches a final tantalum sputtering target product that is rectangular in shape. One of ordinary skill in the art would not find it obvious to incorporate Friedman's extrusion to make a cylindrical product in Turner.

The examiner's position regarding combination of Clark and Friedman due to their differences in product shape as set forth above can also be suitably applied here in response to the combination of Turner in view of Friedman.

Applicant further argues that the cited references achieve desirable properties through numerous deformation steps while the instant invention achieves desirable results by extrusion only.

The examiner does not find applicant's arguments convincing since the instant process claims uses open transitional phrase "comprising" which allows additional process steps to be included in the claimed process.

***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **LOIS ZHENG** whose telephone number is (571)272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/  
Supervisory Patent Examiner, Art  
Unit 1793

LLZ

**Application Number****Application/Control No.**

10/042,549

**Applicant(s)/Patent under  
Reexamination**MICHALUK, CHRISTOPHER  
A.**Examiner**

LOIS ZHENG

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